34.   The magnetic recording medium of claim 13, wherein the lubricant layer further comprises one or more additives.

35.   The magnetic recording medium of claim 34, the additives are cyclic phosphazenes, metallic soaps, fatty acids, amides, fatty acid esters, higher aliphatic alcohols, monoalkyl phosphates, dialkyl phosphates, trialkyl phosphates, paraffins, silicone oils, animal oils, vegetable oils, mineral oils, higher aliphatic amines, inorganic fine powders, resin fine powders, unsaturated aliphatic hydrocarbons, or a mixture therefore.

36.   The magnetic recording medium of claim 1, wherein the lubricant layer including a mixture of two or more lubricants; one lubricant is selected from the group consisting of hydrocarbyl-substituted cyclopentanes, cyclopentenes, and cyclopentadienes which are not functionalized; another lubricant is selected from the group consisting of hydrocarbyl-substituted cyclopentanes, cyclopentenes, and cyclopentadienes which are functionalized.

37.   The magnetic recording medium of claim 13, wherein the lubricant layer including a mixture of two or more lubricants; one lubricant is selected from the group consisting of hydrocarbyl-substituted cyclopentanes, cyclopentenes, and cyclopentadienes which are not functionalized; another lubricant is selected from the group consisting of hydrocarbyl-substituted cyclopentanes, cyclopentenes, and cyclopentadienes which are functionalized.
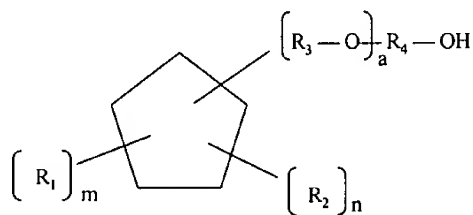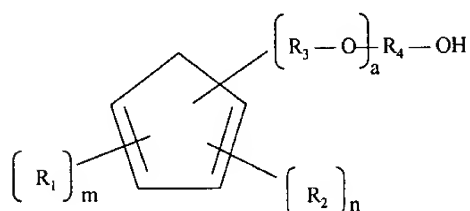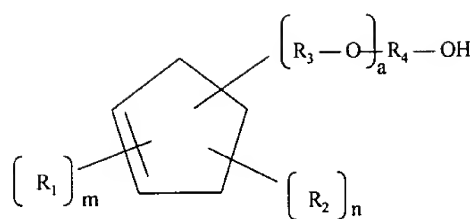
38.   A composition having the following formulas:
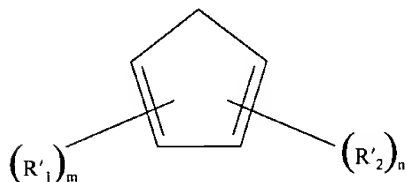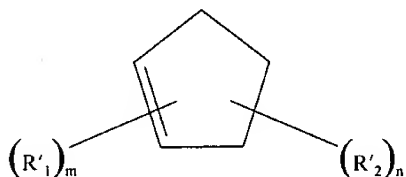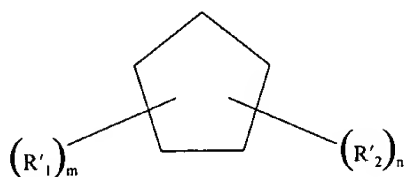
wherein R'$_1$ and R'$_2$ are respectively a hydrocarbyl group which includes a functional group selected from -OH; -NH$_2$; carboxylic acid; carboxylic ester; phenolic ester; polyether; amide; amine; sulfonamide; thiophosphate; and phosphate, and m and n are respectively zero or a positive integer.
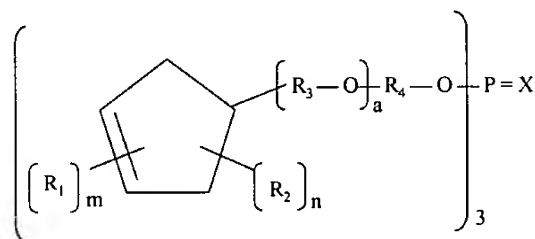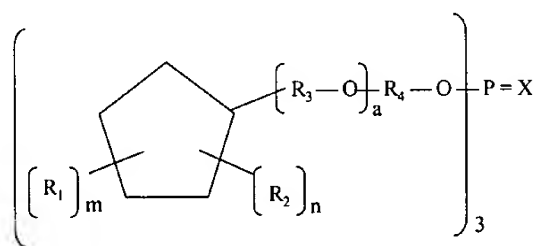
39.   The composition of claim 38, where the composition is represented by the following formulas:
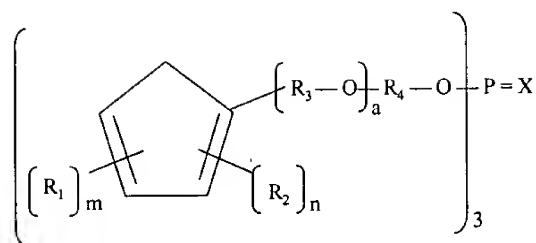
$$\left[R_3-O\right]_a R_4-OH$$

$$\left[R_1\right]_m \quad \left[R_2\right]_n$$

$$\left[R_3-O\right]_a R_4-OH$$

$$\left[R_1\right]_m \quad \left[R_2\right]_n$$

wherein a is 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10; m and n are zero or a positive integer; R_1, R_2, R_3, and R_4 are individually a hydrocarbyl group.
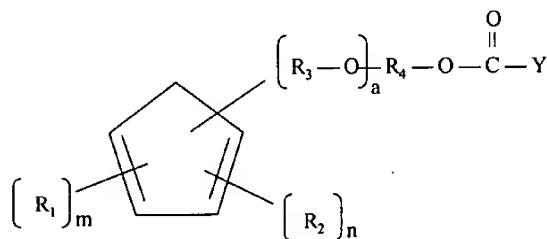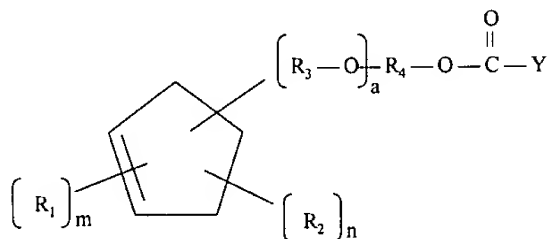
40.   The composition of claim 38, wherein the composition is represented by the following formulas:

$$\left[\quad \left[R_3-O\right]_a R_4-O \quad P=X \right]_3$$

$$\left[R_1\right]_m \quad \left[R_2\right]_n$$

$$\left[\quad \left[R_3-O\right]_a R_4-O \quad P=X \right]_3$$

$$\left[R_1\right]_m \quad \left[R_2\right]_n$$

$$\left[\underset{[R_1]_m \quad [R_2]_n}{\text{(cyclopentadiene ring)}} \quad \left[R_3-O\right]_a R_4-O \right]_3 P=X$$

wherein a is 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10; m and n are zero or a positive integer; R_1, R_2, R_3, and R_4 are individually a hydrocarbyl group; X is either oxygen or sulfur.
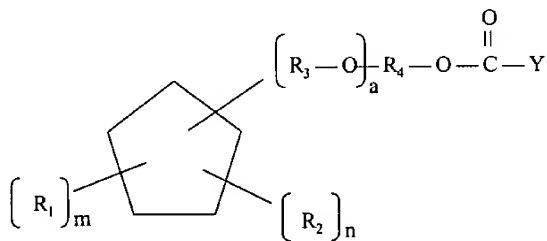
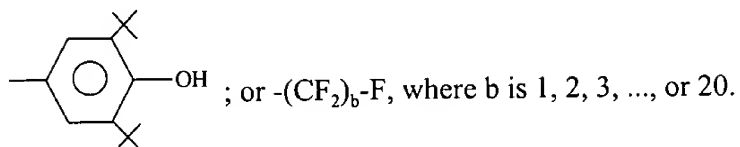41. The composition of claim 38, wherein the composition is represented by the following formulas:

$$\underset{[R_1]_m \quad [R_2]_n}{\text{(ring)}} \quad \left[R_3-O\right]_a R_4-O-\overset{\displaystyle O}{\overset{\|}{C}}-Y$$

$$\underset{[R_1]_m \quad [R_2]_n}{\text{(ring)}} \quad \left[R_3-O\right]_a R_4-O-\overset{\displaystyle O}{\overset{\|}{C}}-Y$$

$$\underset{[R_1]_m \quad [R_2]_n}{\text{(ring)}} \quad \left[R_3-O\right]_a R_4-O-\overset{\displaystyle O}{\overset{\|}{C}}-Y$$

wherein a is 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10; m and n are zero or a positive integer; R_1, R_2, R_3, and R_4 are individually a hydrocarbyl group; Y is -OH; -NH$_2$,

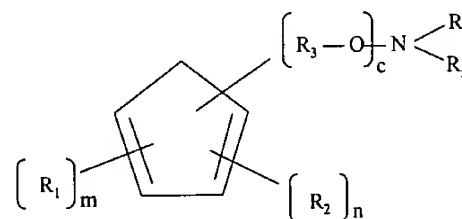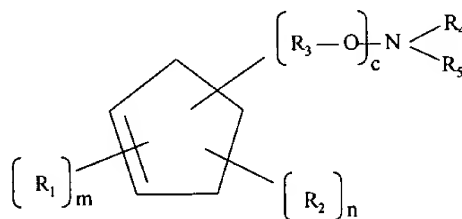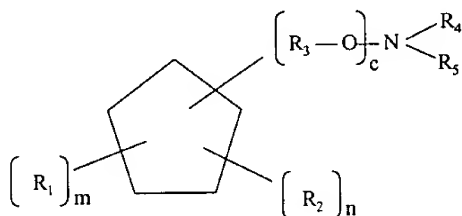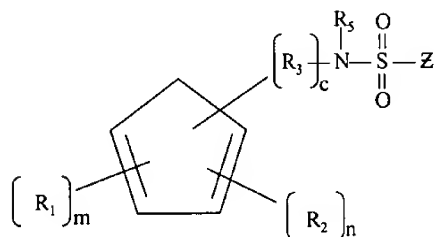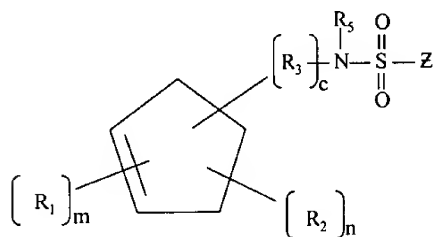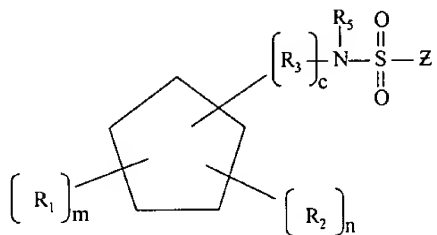 ; or -(CF$_2$)$_b$-F, where b is 1, 2, 3, ..., or 20.

42. The composition of claim 38, wherein the composition is represented by the following formulas:
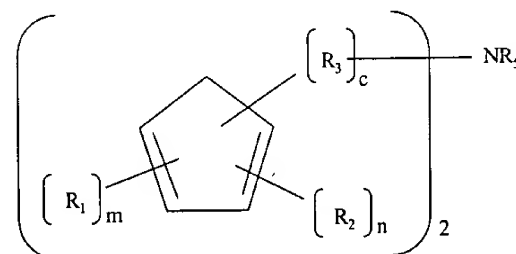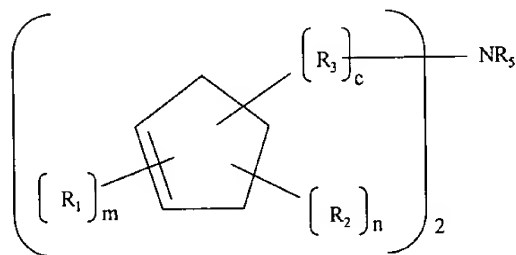

wherein c is 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10; m and n are zero or a positive integer; R_1, R_2, and R_3 are individually a hydrocarbyl group; R_4 and R_5 individually are hydrogen or hydrocarbyl.

43. The composition of claim 38, wherein the composition is represented by the following
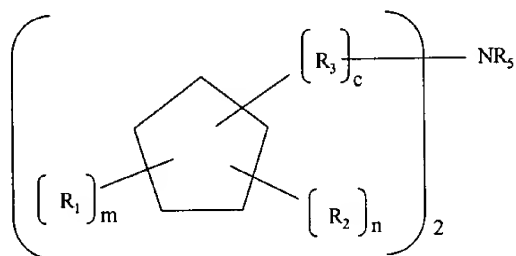
formulas:

wherein c is 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10; m and n are zero or a positive integer; R_1, R_2, and

R_3 are individually a hydrocarbyl group; R_5 is hydrogen or hydrocarbyl; Z is hydrocarbyl or $-(CF_2)_b-$

F where b is 1, 2, 3, ..., or 20.

44.   The composition of claim 38, wherein the composition is represented by the following formulas:

wherein c is 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10; m and n are zero or a positive integer; R_1, R_2, and R_3 are individually a hydrocarbyl group; R_5 is hydrogen or hydrocarbyl.

45. The composition of claim 38, wherein the composition is represented by the following formulas:
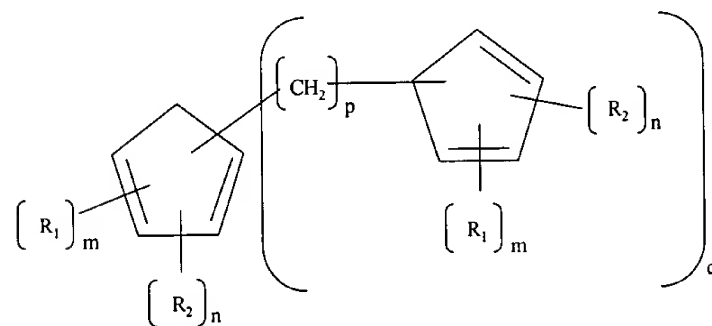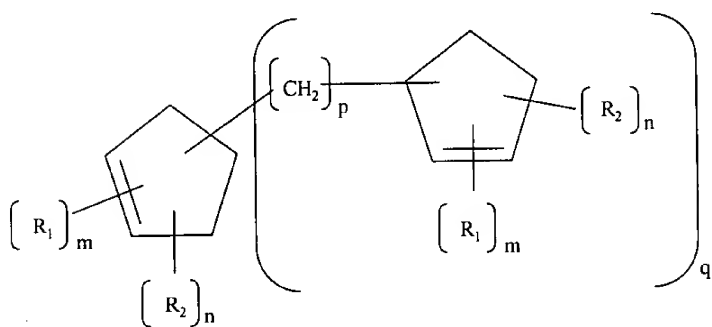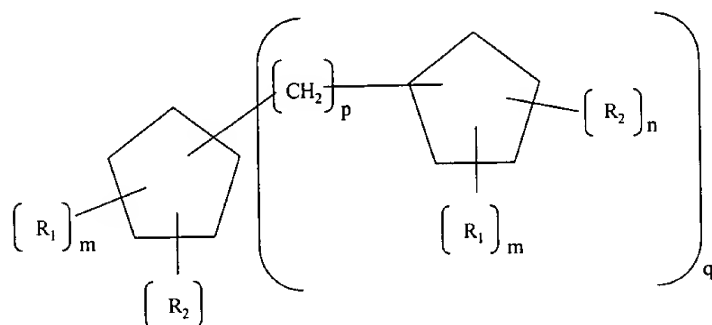
wherein p is 1, 2, 3, ..., or 10; q is 1, 2, 3, ..., or 10; m and n are zero or a positive integer; R_1 and R_2 are individually a hydrocarbyl group.